

An
Inaugural Essay
on the
Modus Operandi of Cold
Submitted to the Examination
of the Provost Medical Professors
and Trustees of the
University of Pennsylvania
for the Degree of Doctor of Medicine
By

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of Lexington Kentucky
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Of the Medus Operandi of Cold.

In whatever point of View we consider the subject of Cold its importance equally claims our attention - to the Philosopher it is deeply interesting, since its various and complicated effects are daily presented to his view; and to the Practitioner of Medicine a most Knowledge of its operation is of the greatest importance because it has become a very common and frequently by a proper application a very powerful and successful remedy in the cure of disease -

With respect to the operation of Cold we may say that only one of two opinions can be true; either that it is a stimulus impressing new and additional vitality into a part in the same manner as other
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of a debilitating nature by abstracting a portion of the standard heat of the body. The latter opinion I will adopt and endeavour to prove.

When it is considered that so many learned Physicians and Philosophers have spent long and laborious lives in the investigation of Medical Science, and in their researches have left no stone untuned, no path unexplored; any new facts or ideas will scarcely be expected from one, who is just with trembling, and uncertain steps, entering the threshold of the temple of Medicine. But as the Laws of the University render it necessary for obtaining a Medical degree that the Candidate should produce an essay on some Medical Subject I cannot forbear soliciting indulgence for the imperfect performance of a task imposed upon me and undertaken with much anxiety and apprehension. The variety of subjects which necessarily occupies the attention of a student prevents him paying

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but exclusive attention to any single subject as well enable
 him to elucidate what was before obscure or to throw many
 new lights upon what was already known. To Collect
 and arrange the facts of others shall be the object of
 this essay and I exceedingly regret that the short time
 to which I am restricted will not admit of my doing
 that justice to the subject which its importance merits -

To Professor Rush whose expanded quins has so ably in-
 vestigated and whose instructive pen has so amply delineated
 the subject I am indebted for many of the facts and
 observations contained in this essay -

That Cold is a Sedative I infer 1st From its diminishing
 the action of the heart and arteries in the same manner
 as Van Swieten rest low diastolic 2nd From the debility and
 inactivity of the inhabitants of Cold Countries and the
 uniform slowness of their pulse as in Greenland seldom
 beating above forty strokes in a minute. These effects become

incident in proportion as we advance to the frozen regions which encircle the pole. All Travellers who have penetrated into those inhospitable Climes have given us a corresponding account of the torpid and feebly animated existence of their inhabitants. This debilitating effect has been extended by Mr Ferguson and Wilson to the faculties and operations of the mind, accusing them of morbidly stupidity and Cowardice.

Infer 3rd Cold to be a Sedative from the palpation of the skin succeeding its first application and Lastly Infer it from the nature of the disease in which it has been used.

That Cold reduces the force, firmness and frequency of the pulse has been correctly ascertained by numerous and well attested experiments; some of which I shall take the liberty of inserting. Dr Rush in his Lectures relates the experiment performed by one of his Pupils under his inspection, by placing the feet in cold pump water for a few minutes

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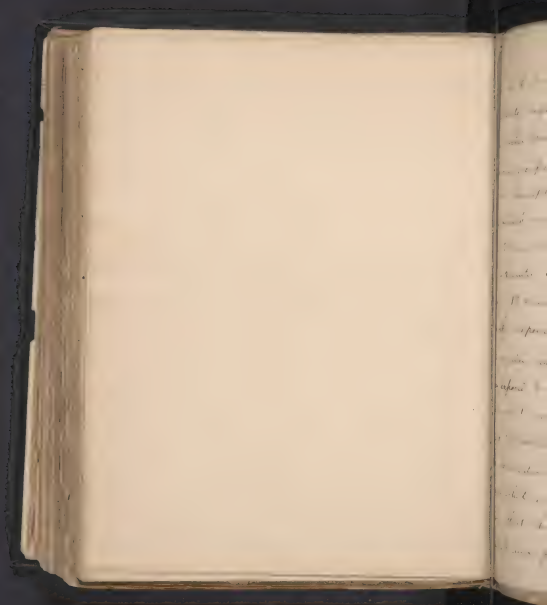
a pulse was rendered barely perceptible in a minute
and it was not until the 10th day that the pulse was restored.

In some more extensive experiments on this subject it was
noted that the heart was weakened, as when the heart was
excited but this result was not the same when
the object of the experiment was exposed to cold without
any, the pulse was restored in force and frequency
at every instance even when muscular exertion had
been made previous to the cold during the course of the
experiment the pulse was reduced in force and frequency -

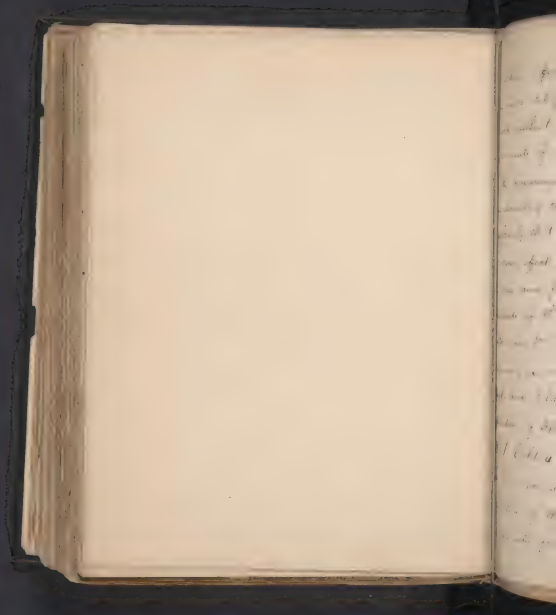
I find in Comptons Book 8166 that he received
a most interesting and decisive experiment that has
been made on the operation of heat. The first experiment
was to compare the unexcited heart with the pulse
after it had been exposed to the heat of the sun, but the pulse
was not increased, but 74 pulsations in a minute
and as to the question of the effect of heat on the heart, the pulse
was 60 in a minute, in three minutes 65, in 6 minutes 62, in 6 minutes

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given 1st 64 p. minute. 2nd 64 p. minute from the
 same. It afforded 4 big pulsations. The pulse not only
 was 144 p. minute but beat much as to room temperature
 the second experience 1st. exp. not fast as in room
 temp. in two minutes the pulse became very weak and
 in 4 p. minute from 76 pulsations to 78 in a minute
 both the above experiences after the immersion had be-
 come cold for the 3rd exp. at a few minutes the pulse
 something more than its normal force and frequency
 the third experience 1st. subject was exposed to ex-
 pose which sent it. Mercury of the thermometer to
 100° fahrenheit. On examining the pulse at 1 p. m.
 the experience, it had lost much of its force and had a
 frequency which was irregular from 76 to 60 pulsations a minute
 referring to the room temp. which was 72° fahrenheit
 then it was 144 p. minute. It was a cold to the
 face and frequency of the pulse. It was then exposed
 1st. and continued a cold to the face and frequency of the pulse.



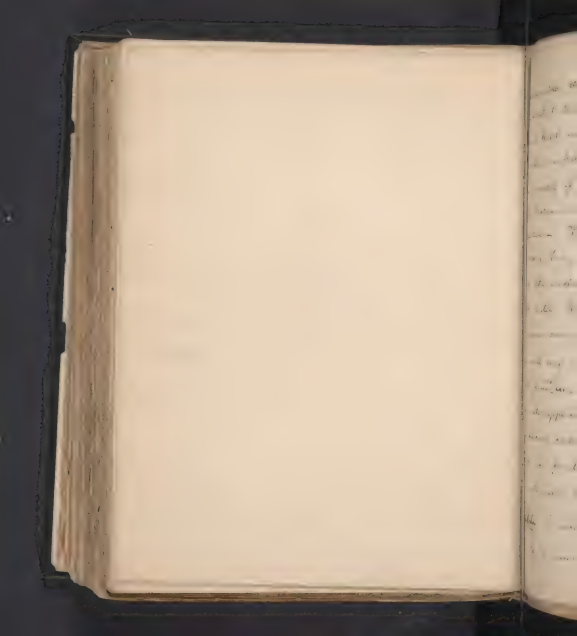
the temperature of the water, the temperature inside and
on the part of the system. To make this possible the
following experiment was instituted: The subject was exposed
to a temperature of 100 degrees Fahrenheit. The subject was
exposed to 100 degrees Fahrenheit, 100 strokes in a minute.
100 strokes in a minute. 100 strokes in a minute.
The number of beats of the heart, in 10 minutes, was 100.
in 10 minutes of water. 100 strokes in a minute.
The experiment was instituted with similar effects. The pulse became
irregular and usually just strokes in a minute, in
exposed to 100 degrees Fahrenheit at the temperature of 100
degrees Fahrenheit and at the expiration of 10 minutes the pulse
100 pulsations in a minute from the commencement to
the termination of the experiment the pulse was 100, 100
in force and pulse. The following experiment
that the primary effect of heat is to increase the force
and frequency of the pulse. I think the



the effects of Cold in perhaps some birds as we
are more independently there in the mode of treatment ap-
plied without success. It was the time in several of the
experiments of Widdrington.

In the foregoing experiments however I have ascertained that
in order they could communicate external action it was not indi-
catedly that it was a Solutio; for Opium & Opoids have
a same effect. There is most unquestionably more of the
same from a imperfect knowledge of the modes
made in these articles. The experiments of Widdrington
show me & more show, that Opoids are anesthetics
and it is thus and its inducing the pain is secondary
and I believe is not the true mode of the Solutio
function of Opium.

That Cold is a Solutio Sufficient from the principle of
action for its first application. This is produced by a
action of the Superficial parts of which more the blood
permeable from circulating than there. If the Cold be



considerable the effect is particularly evident. But it may be
 that the human organism, to embrace this contraction - the
 heart enlarged in its quantity of blood circulating in
 the vessels; where there is no any manner or present
 quantity of blood from circulating and contraction occurs
 the heart will produce it and we will just be showing
 action - The distention of the heart depends upon a quantity
 of blood being pumped to that organ, although that blood
 is the action occurs; this may be done either by force or
 action. The heart is under the influence of some power
 of a contracted appearance as by the application of cold;
 and may be done by a fluid that exerts of the above
 power. The heart is an organ so that any opposite effects
 the application of cold and heat to the heart in pro-
 ducing contraction the other situation we must expect that there
 is of fluidity, as any opposite action upon that heart
 however, cold been the maximum and the relative
 body I suppose the relative operation of cold upon the heart
 the heart is in that it is the heart and the heart.



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to the property of the foregoing section. It is not
 out, but of cold is. It seems then for above two reasons
 in proper, for who would with a doubt of the
 party of every stream - at the same time, in
 the cold is forbidden.

As it has been asked in what manner does cold
 in removing the delivery occasioned by heat, I answer
 contracts a portion of the quantity of heat, & according
 to its volatility, & its increased sensibility to the stimulus, it
 leaves the place upon the skin after conversion from
 heat, when properly used - This point I did not escape the
 Father of our own Hippocrates, for he observes that those

those snow or any other great coldness oblige us much
 to be in their part. Their hands & their heads suffer greatly &
 it, when they are covered up warm, with a burning and bright
 snow on them, affected with blisters, as if they were burnt by
 it. It is from this increased sensibility to cold and its
 not that has induced the belief that cold has a longer and
 it is a situation. If cold, observes Dr Brown sometimes



The state, it produces, it affects not in a
 but rather as diminishing, except in heat, and returning to the
 proper stimulant temperature, as by accumulating the
 ability excited by reflex stimulus, and communicating
 it to the rest of the system, power is thereby in-
 creased. - That long and constantly applied, produces
 a ^{ready} ~~full~~ assimilation - and cord restores health in
 the same manner in the same manner that bloodletting does
 the other, since the same arguments that have been adduced
 from the stimulating agency of cold in communicating
 one to the system. - It is a good and proper
 effect to stimulate the existing power of locomotion
 - This is induced by cold has been ascertained from
 the state, - it is the effect of stimulation
 - down upon of the subjects by the stimulation of heat
 - the result is a sudden escape from irregular
 and consequent from an certain consequences of the irrita-
 tion of stimulus - the effect is similar to that of cold is



is not by friction with the hand.

gave the redness and apparent enlargement of the vessels of the skin, when exposed to a fog of cold air, & thereby evidently showed that the first effect of the application of Cold is to produce a greater degree of it, & to relax the vessels, & that the globules of the blood are not admitted into vessels, which already refused its admission, and being unable to propel them out again, a stagnation ensues and a still greater degree of it ensues, as it is shown and explained.

It has been said, that the cold is both a stimulus & by its own weight it may stimulate the part to reject it as much as if heat upon the same principle I account for the use of sprinkling water in some cases of erysipelas, where the skin is extremely sensible to the most subtle stimuli. & in some of the natural heat of the face and extremities may be so diminished that the temperature of even a fresh response may be slightly stimulating.

Drainage of cold water after a severe sweating, saturated with of hot water, spirit, salt water, and warm water, which are



unquestionably stimuli produce the same effect. Cold water
 induces sweat only in inflammatory diseases when the ^{capillary} vessels
 of the skin transcend the secreting point and from the great
 sympathy between the stomach and skin the cold drink taken
 into the stomach reduces its action and consequently that of the
 skin to the sweating point.

Another argument in favour of the stimulating operation of cold
 is the appearance of the skin called *Erysipelas*. May not this
 be the natural appearance of the skin and made to appear
 with by exposure to heat? or owing to a contraction of the
 vessels leaving the ends of the vessels exposed.

Cold has been said to be the exciting cause of Fever, and thus infered
 stimulus. It may induce fever, 1st By checking perspiration and
 2^d by suddenly destroying the equilibrium of the system. The
 human frame is capable of bearing great varieties of heat and
 cold, if time be given to accommodate itself to those different states.
 The mischief is done from the sudden transition of one state to
 the other.

The fee Frenzy and other convulsive disease from bloodletting
and the application of Fear and their stimulant operation has
been advanced by any one.

From the preceding facts I think we may unequivocally
say that the primary effect of cold is that of Sedative -
I cannot conclude this very imperfect essay without thus expressing
my gratitude for the benefit I have derived from your instructions,
and my attendance upon your Lectures; and my most ardent
wish is, that your attempts to alleviate the sufferings of Mankind
may be crowned with that success, which your able talents, and
zealous exertions so justly merit -

